

# PATENT SPECIFICATION

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## (54) CONTAINERS

(71) We, METAL BOX LIMITED, of Queens House, Forbury Road, Reading RG1 3JH, Berkshire, a British Company, do hereby declare the invention for which we pray that a patent may be granted to us, and the method by which it is to be performed, to be particularly described in and by the following statement:-

5 This invention relates to methods of making containers and more particularly though not exclusively, to containers having a lid which can be levered from a generally annular ring for the same.

10 Many such lever lidded containers are known, some of which are described in British Patent Specifications numbered 24,353 of 1906 and 832,383. Hitherto it has been customary to stamp the lid from one sheet of metal and the lever ring from another sheet of metal. This procedure wastes the peripheral margins around each stamping, and the discs removed to create the rings have also been discarded because they are difficult to feed to high speed presses.

20 In a first aspect this invention provides a method of making a lid and ring for a container said method comprising the steps of drawing a preform from sheet material said preform comprising a first or ring portion and a second or lid portion therein, said first portion including a flange and an upper side wall portion, said second portion including a lower side wall portion and a closure panel, said upper side wall portion extending radially outwardly off the lower side wall portion; severing the preform along a line between the upper and lower side wall portions;

35 reforming the upper side wall portion of the first portion of the preform to define an opening in a ring;

40 reforming the lower side wall portion of the second portion of the preform to a lid, the side wall of which is adapted to engage with the reformed upper side wall of the first

portion.

The lower side wall portion may reform to a plug portion which fits in the opening in the ring or alternatively be reformed to form the skirt of a cap which fits outside the reformed upper side wall portion.

In a preferred method the upper and lower side wall portions of the preform are drawn to be perpendicular to the closure panel and connected by an annular step portion. The preform is preferably severed by opposed shearing forces applied to the step portion in a direction perpendicular to the plane of the closure panel.

50 In one embodiment of the method the flange is drawn to include a chuck wall and seaming panel adapted to permit the ring to be attached to a container body by means of a double seam. In a preferred form of this embodiment of the method a radial margin portion joins the chuck wall to the upper side wall portion, in order to enable the ring to survive abuse.

60 The upper side wall portion is reformed to create an elongate wall terminating in an outward curl, said elongate wall defining the opening into which the plug lid is adapted to fit.

65 The side wall portion of the second or lid portion is preferably reformed to terminate in an outwardly directed curl.

The method may include the further step of fitting the lid in the ring.

70 If thought necessary the lid is adhered to the ring.

In a second aspect the invention provides a lid and ring for a container when made according to the method of any preceding claim.

75 Various embodiments of the invention will now be described, by way of example, and with reference to the accompanying drawings, of which:

80 Fig. 1 is a perspective sketch, part sectioned, to show a preferred preform accord-

ing to the invention.

Fig. 2 is a diagrammatic part section of the preform of Fig. 1.

Fig. 3 shows diagrammatically the separation of the ring portion from the lid portion.

Fig. 4 shows diagrammatically a detailed section of the completed ring.

Fig. 5 shows diagrammatically a detail of the curled lid.

Fig. 6 shows diagrammatically the curl of Fig. 5 flattened to a preferred shape.

Fig. 7 shows diagrammatically the lid of Fig. 6 with adhesive applied to the curl.

Fig. 8 is a sectioned side elevation showing closure details of the assembled lid and ring.

Fig. 9 is a sectioned side view of an alternative preform.

Fig. 10 is a sectioned side view of an overcap arrangement.

Fig. 11 is a sectioned side view of a plug lig embodiment.

The preferred preform shown in Fig. 1 has a seaming panel 1, a dependant chuck wall 2, radially flanged margin 3, cylindrical portions 4a and 4b, joined by a radial step 5 and a closure panel 6. This preform is formed from a sheet of material and according to the method of the invention the preform provides a first portion, made up of the seaming panel 1, chuck wall 2, radial margin 3, upper cylindrical portion 4a and part of the inwardly directed radial step 5, this first portion being used to create a ring which is able to receive a lid made from the second portion which is made up of the lower cylindrical portion 4b, the inner part of the radial step 5 and the closure panel 6.

Figs. 2-7 show how the preform is made, severed and further formed to create the lid.

In Fig. 2 the first portion is indicated by (A) and the second portion by (B). Referring to Fig. 3 the first portion (A) is shown being severed from the second portion (B) by tools 7.

Referring to Fig. 4, it will be seen that the first portion (A) is further formed to create an elongated wall 8 terminating in an outward curl 9. By careful control of the curling operation the wall 8 can be formed to define the orifice to receive the lid.

Referring to Fig. 5 it will be seen that the second portion (B) of Fig. 3 has been further formed so that the start curl 10 of Fig. 3 is turned into the more complete curl 11 of Fig. 5.

In Fig. 6 the curl of Fig. 5 has been further flattened to create a flattened curl 12 having the raw edge of the material 13 folded within the curl. This arrangement is helpful in avoiding the unsightliness of rusty edges of the lid.

In Fig. 7 the lid curl 12 has had an adhesive 14 positioned on the underside thereof the purpose of which will be described later.

Fig. 8 shows a side elevation of part of a can fitted with a ring and lid according to the invention. The seaming panel 1 of the ring has been joined to a container wall 15 by means of a known double seam 16. It will be seen that the radial margin 3 separates the upstanding portion 8 from the container walls, so giving the ring assembly better ability to resist abuse in the event of impacts. The upstanding portion 8 and curl 9 of the ring represent a resilient mouth for the container into which a lid 17 is fitted so that the cylindrical portion 4b is a push fit within the ring. The lid has been provided with the flattened curl 12 of Fig. 7 which is provided with the sealant adhesive 14. The sealant is particularly useful when the ring and lid have been made shallow for reasons of economy of material because in these conditions the margin of interference to hold the lid in the ring is small. However, it is within the scope of the invention to manufacture lids without sealant or adhesive.

Although the invention has been described in terms of what the trade knows as a cushion ring having a resilient mouth to receive the lid, the lids of the simpler type without such resilience are also within the scope of the invention. It will be understood that considerable economies in material can be achieved by the simultaneous stamping of a lid material nested within the ring material. Furthermore the invention enables balanced quantities of components to be produced, so simplifying stock control.

In Fig. 9 a preform 20 has been drawn from sheet metal to have a closure panel portion 21 and a peripheral wall 22 extending upwardly and outwardly to an outwardly flanged portion 23. The wall portion 21 has a frustoconical upper portion 22A and a frustoconical lower portion 22B.

According to the method of the invention the wall portion 21 is severed, between the upper and lower frustoconical portions 22A and 22B and a first portion comprising the flange 23 and upper frustoconical portion 22A is reformed to make a ring adapted to receive a lid made from the second portion comprising the frustoconical portion 22B and closure panel 21.

In Fig. 10 the lid formed from the second portion is in the form of an overcap having a closure panel 21 and a peripheral dependent reformed skirt 24 which surrounds and engages with the reformed upper frustoconical portion denoted 25. Such a closure arrangement may benefit from the addition of adhesive (not shown) at the zone of engagement between cap and ring.

In Fig. 11 the second position comprising the lower frustoconical portion 22B and closure panel 21 of the preform 20 have been reformed into a plug lid 27 which fits within the reformed ring 28 made from the

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first portion, of the preform.

WHAT WE CLAIM IS:-

1. A method of making a lid and ring for a container said method comprising the steps of drawing a preform from sheet material said preform comprising a first or ring portion and a second or lid portion therein, said first portion including a flange and an upper side wall portion, said second portion including a lower side wall portion and a closure panel, said upper side wall portion extending radially outwardly off the lower side wall portion; severing the preform along a line between the upper and lower side wall portions;  
reforming the upper side wall portion of the first portion of the preform to define an opening in a ring;  
reforming the lower side wall portion of the second portion of the preform to a lid, the side wall of which is adapted to engage with the reformed upper side wall of the first portion.
2. A method according to claim 1 wherein the lower side wall portion is reformed to a plug portion which fits in the opening in the ring.
3. A method according to claim 1 or claim 2 wherein the upper and lower side wall portions of the preform are drawn to be perpendicular to the closure panel and connected by an annular step portion.
4. A method according to claim 3 wherein the preform is severed by opposed shearing forces applied to the step portion.
5. A method according to any preceding claim wherein the flange is drawn to include a chuck wall and seaming panel adapted to

permit the ring to be attached to a container body by means of a double seam.

6. A method according to claim 5 wherein a radial margin portion is drawn to join the chuck wall to the upper side wall portion.

7. A method according to any of claims 2 to 6 wherein the upper side wall portion is reformed to create an elongate wall terminating in an outward curl, said elongate wall defining the opening into which the plug lid is adapted to fit.

8. A method according to any preceding claim wherein the side wall portion of the second or lid portion is reformed to terminate in an outwardly directed curl.

9. A method according to any preceding claim including the further step of fitting the lid in the ring.

10. A method according to claim 7 wherein the lid is adhered to the ring.

11. A lid and ring for a container when made according to the method of any preceding claim.

12. A method, of making a ring and plug lid for a container, substantially as hereinbefore described with reference to Figs. 1 to 8 of the accompanying drawings.

13. A method, of forming a ring and plug lid for a container, substantially as hereinbefore described with reference to Figs. 9 and 11 of the accompanying drawings.

14. A method forming a ring and a lid for a container substantially as hereinbefore described with reference to Figs. 9 and 10 of the accompanying drawings.

J. WENDON

Chartered Patent Agent  
Agents for the Applicants

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2 SHEETS

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Sheet 1

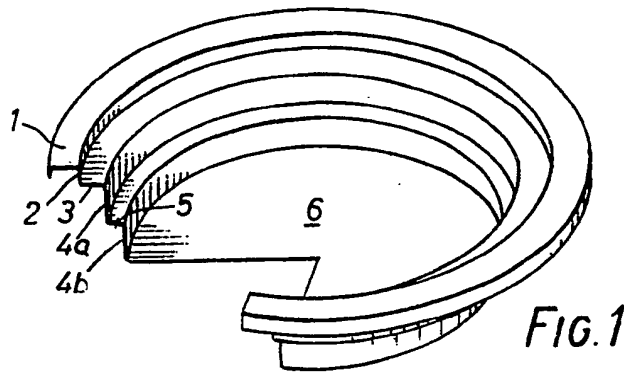


FIG. 1

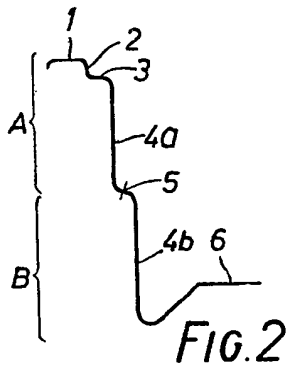


FIG. 2

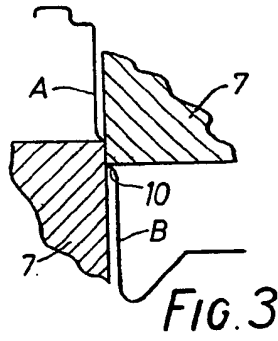


FIG. 3

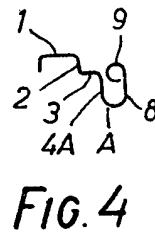


FIG. 4

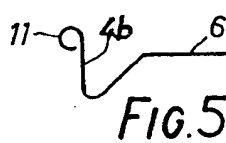


FIG. 5

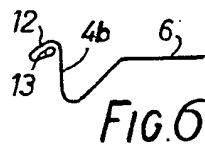


FIG. 6

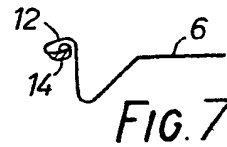


FIG. 7

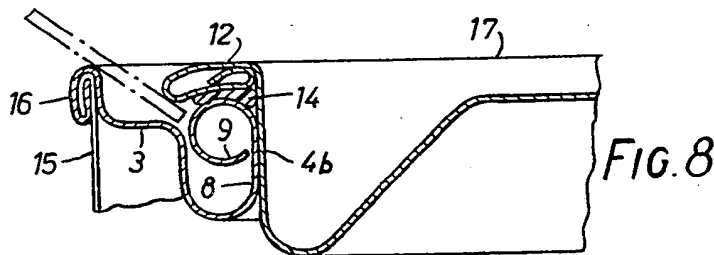


FIG. 8

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Sheet 2

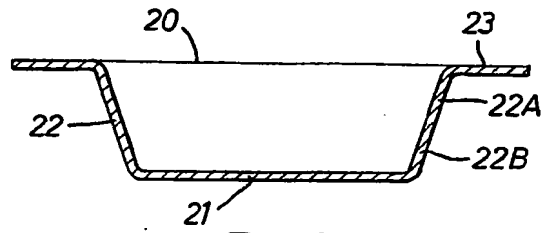


FIG. 9

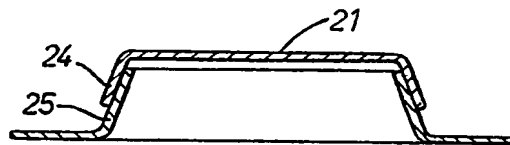


FIG. 10

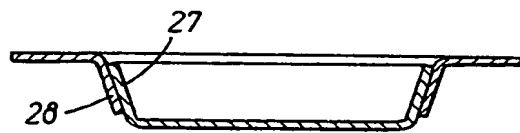


FIG. 11

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